

on June 15 there were 16 chrysalids. Ten had died without transforming. Two were drowned and one was crushed. On June 20 the first adult beetle appeared. (*Phytodecta pallidus* Linn.)

NEW THYSANOPTERA FROM NEW YORK.

BY J. R. WATSON, Gainesville, Fla.

A small collection of thrips captured in the Adirondacks and about Syracuse during the summer of 1919 by Prof. Carl J. Drake, of the New York State College of Forestry, was submitted to the author for identification, as was also a large series of a single species collected about Syracuse in 1920 by Miss Evelyn Osborn, Professor of Entomology in the School of Agriculture of Syracuse University. Among these are four undescribed species.

Trichothrips drakei n. sp.

FEMALE: APTEROUS. General color dark brown. Intermediate antennal segments, tarsi, and tibiae lighter brown. *Measurements*: Total body length 2.8 mm. (2.4 to 2.9 mm.); head—length 0.35 mm., width 0.25 mm.; prothorax—length 0.25 mm., width including coxae 0.51 mm.; metathorax—width 0.57 mm.; abdomen—greatest width 0.73 mm.; tube—length 0.31 mm., width at base 0.11 mm., at apex 0.052 mm. Antennae—total length 0.74 mm.;

Segment	.....	1	2	3	4	5	6	7	8
Length	.....	73	73	120	109	98	87	70	52
Width	.....	57	39	43	40	36	35	30	20 microns.

Head about 1.75 times as long as wide, widest behind the eyes and converging posteriorly; cheeks slightly arched, bearing a few thick, heavy bristles arising from low, wart-like protuberances; postocular bristles long, reaching beyond the anterior margins of the eyes. *Eyes* small, sunken, occupying less than a fourth of the length and .6 the width of the head; facets small. *Ocelli* large, reddish brown; anterior situated far forward between the bases of the antennae, facing forward; posterior pair situated opposite the anterior half of the eyes and near, but not touching, their margins. *Mouth* cone long, reaching fully three-fourths of the way across the

prosternum. *Antennae* twice as long as the head; segment 1 unusually large, concolorous with the head; segment 2 urn-shaped, nearly as dark as 1; 3 clavate, yellow in the basal 3/5, clouded with light brown apically; 4-6 similar in shape, but the apical brown area becoming progressively larger and darker; 7 and 8 all brown. Sense cones and bristles long, but colorless.

Prothorax (including coxae) about twice as wide as long. Sides nearly straight, but diverging posteriorly. Posterior angles rounded, bearing a single long, pale yellow bristle; 4 or 5 short, heavy bristles on the coxae. Two similar long, yellow bristles along the lateral margin; one a little behind the middle and the other near the anterior angle. A third long yellow bristle near the posterior margin. *Pterothorax* and *abdomen* a lighter brown than the head and especially the prothorax. Sides nearly parallel and slightly arched. *Legs* rather short; fore femora considerably enlarged; as dark as the prothorax; margined with short but rather thick bristles.

Abdomen large and heavy, cylindrical. Each segment bearing a few short bristles on the posterior angles, and on the posterior segments one or two medium long yellow ones. Tube rather small and slender as compared to the abdomen; sides straight, but converging posteriorly; terminal bristles shorter than the tube.

WINGED FORM. Similar to the apterous, but smaller. Total body length 2.2 mm. (2.0 to 2.4). Head—length 0.32 mm., width 0.24 mm.; prothorax—length 0.24 mm., width 0.49 mm.; mesothorax—width 0.52 mm.; abdomen 0.60 mm.; tube—length 0.27 mm., width at base 0.105 mm., at apex 0.05 mm. *Antennae*—total length 0.68 mm.;

Segment	1	2	3	4	5	6	7	8
Length	57	71	109	100	96	86	67	50
Breadth	50	36	36	37	36	34	32	24 microns.

Wings long, membrane projecting far beyond the tip of the abdomen, light brown, nearly clear at the base; fringing hairs long and slender, 13 to 18 interlocated ones.

Male not seen.

Larvae deep, orange red with antennae, legs and tube brown.

Described from three winged females and numerous apterous ones and larvae. Collected from phylloxera galls on hickory at Syracuse, N. Y., September, 1919, by Prof. Carl J. Drake, and

under the bark of black locust trees in October, 1920, by Miss Evelyn Osborn.

Type in the author's collection; paratypes in the National Museum, the collection of the Brooklyn Entomological Society, and of the N. Y. State College of Forestry.

Trichothrips salicis n. sp.

Female. General color dark brown; tarsi and antennal segment 3 light brown. *Measurements:* Total body length 2.8 mm.; head—length 0.38, breadth 0.28 mm.; prothorax—length 0.24 mm., breadth 0.52 mm.; mesothorax—breadth 0.53 mm.; abdomen—greatest width 0.64 mm.; tube—length 0.28 mm., width at base 0.10 mm., at apex 0.05 mm. Antennae—segment 1, 48; 2, 72; 3, 118; 4, 100; 5, 100; 6, 90; 7, 53; 8, 53 microns. Total length 0.62 mm.

Head about 1.3 times as long as wide, cheeks slightly arched, bearing minute setae. *Eyes* small, occupying about .2 the length of the head. *Ocelli* minute, posterior pair opposite the anterior third of the eyes. Antennae about 1.6 times the length of the head. Third antennal segment noticeably longer than any of the others, 7 and 8 of about equal length, but varying even in the same individual. *Mouth cone* rounded at the apex, reaching two-thirds across the prosternum.

Prothorax considerably shorter than the head; posterior angles well rounded, a pair of stout spines on the coxae. Fore femora but slightly enlarged. Fore tarsus without a tooth.

**Pterothorax* subrectangular, sides arched. Wings wanting.

Abdomen short and thick; tube moderately long and slender. Bristles prominent on only the last two abdominal segments, almost colorless.

Male similar to the female, but smaller. *Measurements:* total body length 1.8 mm.; head—length 0.33, breadth 0.24 mm.; prothorax—length 0.21 mm., breadth 0.38 mm.; mesothorax—length 0.24, breadth 0.43 mm.; abdomen—greatest width 0.50 mm.; tube—length 0.21, width at base 0.07, at apex 0.04. Antennae—segment 1, 48; 2, 67; 3, 100; 4, 91; 5, 81; 6, 72; 7, 53; 8, 44 microns; total length 0.50 mm. *Fore tarsi* with heavy, almost straight spines. *Post-ocular* bristles slender, projecting beyond the eyes. Terminal bristles shorter than the tube.

Described from a single female and a single male collected from

willow at Cranberry Lake in the Adirondacks by Prof. Carl J. Drake in July, 1919. *Types* in the author's collection.

Agrees with *T. fuscicornis* Hood in the unarmed fore tarsi of the female and the pedicellate 8th antennal segment, but differs in the length and color of the third segment and in the 7th not being noticeably shorter than the 8th.

KEY TO THE SPECIES OF TRICHOTHRIPS OF NORTH AMERICA.

- 1 (6) Prominent spines on body with blunt or dilated tips; most forms very dark brown or nearly black (except *T. angusticeps*), usually with short wings (except *T. longitubus*).
- 2 (3) Each fore tarsus armed with a tooth; antennae about 1.7 times as long as head; total body length about 1.5 mm.
T. angusticeps Hood ('08).
- 3 (2) Fore tarsi not armed; antennae about twice as long as head.
- 4 (5) Wings fully developed; body length about 1.8 mm.; tibiae, tarsi, and intermediate segments of the antennae bright lemon yellow; tube fully as long as the head.
T. longitubus Hood ('08).
- 5 (4) Wings short; body length about 1.2; whole antenna clear yellow; tube about half as long as the head.
T. brevitubus Watson ('18).
- 6 (1) Prominent spines on body acute; antennae about twice as long as head.
- 7 (10) Individuals small, about 1 mm. in length, without ocelli or wings.
- 8 (9) Eyes reduced, lateral profile showing but three facets; first segment about half as long as the second.
T. smithii Hood ('09).
- 9 (8) Eyes small, but normal; first antennal segment nearly as long as second.....*T. flavicauda* Morgan ('13).
- 10 (7) Individuals rather large, 1.5 mm. or more, wings fully developed or brachypterous.
- 11 (22) Each fore tarus armed with a tooth.
- 12 (13) Antennae 1.75 times as long as head; tube .7 as long as head; total length about 2 mm., fore tarsi with a short, stout tooth.....*T. ambitus* Hinds ('02).
- 13 (12) Antenna slightly more than twice as long as the head; tube slightly shorter than head.

- 14 (15) Total body length about 1.7 mm.; fore tarsi with a small acute tooth; wings light gray brown, spotted with darker.
T. americanus Hood ('08).
- 15 (14) Tarsi with a large tooth.
- 16 (17) Last two antennal segments completely united; eyes very small; body length about 1.5 mm.
T. anomocerus Hood ('12).
- 17 (16) Last two antennal segments not compactly united; eyes normal; body length 1.8 mm. or more.
- 18 (19) Tarsal tooth straight.
T. marginalis Hood & Williams ('15).
- 19 (18) Tarsal tooth curved.
- 20 (21) Body length 2.8 mm.; head dark brown. .*T. drakei* n. sp.
- 21 (20) Length 1.9 mm.; head yellowish.
T. terminalis Hood & Williams ('15).
- 22 (11) Tarsi unarmed.
- 23 (24) Color ochraceous yellow.*T. zonatus* Hood ('14).
- 24 (23) Color blackish brown.
- 25 (26) Antennal segments 2-5 subequal, 7 shorter than 8.
T. fuscicornis Hood ('16).
- 26 (25) Segment 3 elongated, 7 and 8 subequal. . .*T. salicis* n. sp.

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Cryptothrips adirondacks n. sp.

Body color uniform dark brown, almost black, tarsi and antennae lighter brown. Measurements: Total body length 2.25 mm. (2.00 to 2.5 mm.); head—length 0.28 mm., breadth 0.19 mm.; prothorax—length 0.14 mm., breadth 0.33; abdomen—greatest breadth 0.41 mm.; tube—length 0.24 mm., width at base 0.08 mm., at apex 0.04 mm. Antennae—total length 0.45 mm.; segment 1, 44; 2, 52; 3, 82 (72 to 94); 4, 85 (81 to 90); 5, 72 (62 to 82); 6, 63 (53 to 73); 7, 55; 8, 35 microns.

Head 1.5 times as long as wide; cheeks slightly arched, quite markedly constricted posteriorly, bearing a few short sparse hairs; dorsal surface striated; vertex swollen into a prominent rounded protuberance which occupies the entire space between the eyes and bears the anterior ocellus at the apex; *post-ocular bristles* about as long as the eyes, dilated into a small colorless head; *eyes* large, protruding, not produced on the ventral side, occupying nearly a third the length of the head, dark brown, anterior half of the inner margin nearly straight; *ocelli* large, posterior pair situated well forward, opposite the anterior $\frac{1}{4}$ of the eye whose margins they do not touch; *mouth cone* rather long, reaching two-thirds the distance across the prosternum; *antennae* 1.5 times the length of the head; segment 1 dark brown; 2, lighter; 3 and 4 yellow; remainder light yellowish brown, darker apically.

Prothorax small, length only about half that of the head; breadth, including coxae, about equal to the length of the head; surface reticulated; posterior angles well rounded and bearing each a single, medium heavy spine whose end is dilated into an inconspicuous knob; somewhat longer spine on each coxa; *legs* rather slender, almost as dark as the body; *tarsi* a lighter brown; *fore femora* but little enlarged and *fore tarsi* unarmed.

Pterothorax considerably wider than the prothorax; *wings* rather weak, membrane clear except at the extreme base, constricted in the middle, fringing hairs long, 5 to 14 interlocated ones.

Abdomen long and slender.

Male similar to the female, but smaller.

Larvae very long and slender; black with reddish hypodermal pigmentation.

Described from numerous females collected from willow and *Viburnum alnifolium* at Cranberry Lake, N. Y., July, 1919 and 1920, by Prof. Carl J. Drake.

Type in the author's collection; *paratypes* in the National Museum, in the collection of the Brooklyn Entomological Society, and that of the N. Y. State College of Forestry.

Idolothrips fuscus n. sp.

General color dark brown, with much bright red hypodermal pigmentation on thorax and abdomen. *Measurements*: Total body length about 4 mm. (3.5 to 4.6 mm.); head—length 0.61, breadth 0.29; prothorax—length 0.16, breadth across the coxae 0.52; pterothorax—greatest breadth 0.63; abdomen—greatest breadth 0.64; tube—length 0.55, width at base 0.115, at apex 0.07 mm. Antennae—total length 0.66 mm.

Segment	1	2	3	4	5	6	7	8	
Length	72	82	168	145	137	114	64	70	
Breadth	55	45	50	52	47	44	36	23	microns.

Head a little over twice as long as broad; cheeks nearly straight and parallel, but bulging a trifle near the base, contraction at the extreme base and behind the eyes barely perceptible, roughened with numerous short wart-like swellings and sparsely provided with medium-sized bristles; dorsal surface minutely striated; post-ocular bristles situated far behind the eyes, longer than the eyes but pale and inconspicuous, an equally long bristle in front of each posterior ocellus; other bristles short; *eyes* small, not protruding, dark, facets small, distance across the eyes the smallest diameter of the head except for a minute constriction immediately behind them; *ocelli* small and inconspicuous, anterior one situated on the projection between the bases of the antennae, posterior pair opposite the middle of the eyes and close to their margins; *mouth cone* short and rounded, reaching about the middle of the prosternum; *antennae* almost uniformly brown, nearly as dark as the head, apex of segment 2 a little lighter brown, extreme apices of segments 3–5 very light yellow, almost colorless; segment 1 cylindrical, 2 cup-shaped, constricted to a wide "neck" above the base and curved outward, 3–5 clavate, 6 and 7 sub-cylindrical, their apices extended over the bases of the segment in front, 8 lanceolate, bristles brown, rather long, sense cones colorless, rather short.

Prothorax much shorter than width of head, three times as wide as long; no prominent median groove; surface faintly reticulated; one of the two bristles at each posterior angle longer than the prothorax, curved; two pairs along the posterior border, the outer but little shorter than those at the angles, the median much shorter; a short, curved bristle at each anterior angle, and two pairs along the anterior margin of which the inner are longer.

Pterothorax considerably wider than the prothorax, sub-rectangular; sides slightly convex and converging posteriorly; destitute of long bristles; *legs* rather long and slender; mostly concolorous with the head, the extreme bases of the femora, the inner side of the apices of the femora, and the tarsi a little lighter brown; fore femora not at all thickened; fore tarsi with a very small, acute, forward-directed tooth on the inner side at the tip; *wings* short, generally reaching only to the fifth or sixth abdominal segment, but the colorless membrane is broad, on the fore pair the colorless median vein reaches about to the middle, fringing hairs long, on the fore wing double for about 34 (26 to 36) hairs.

Abdomen about as wide as pterothorax, long and slender, sides nearly parallel to 5th or 6th segment and then rather abruptly contracted; anterior segments destitute of conspicuous bristles but the posterior bearing progressively longer ones, those on segment $9\frac{3}{4}$ as long as the tube; tube long and slender, sides almost parallel for three-fourths of its length and then abruptly converging; terminal bristles less than half as long as the tube.

Male unknown.

Described from four females collected from old burrows of a cerambycid in a twig of basswood at Syracuse, N. Y., October, 1920, by Prof. Carl J. Drake, and a single female collected at Sherbon, Mass., May 10, 1919, by Mr. C. A. Frost. *Type* in the author's collection; *paratypes* in the collections of the N. Y. State College of Forestry and of the Brooklyn Entomological Society.

Close to *T. armatus*, but differing in the shape of the head, shorter prothorax, color of the antennae and numerous minor characters.

In addition to the new species described above, the following establish apparently new locality records:

Aeolothrips fasciatus L. Cranberry Lake, N. Y., June 5, 1920. C. J. Drake, Coll.

Hoplothrips magnafemoralis Hinds (= *Acanthothrips magnafemoralis* Hinds). In the top of a fallen maple tree. Cranberry Lake, N. Y., July, 1920. C. J. Drake, Coll.

Hoplothrips corticis Serville (= *Acanthothrips nodicornis* Reuter). With the last.

There seems to be no published description of the larvae of these species. The larvae of both species are bright red, but those of *corticis* are a deeper red. In this species the color extends into the legs, except the tarsi, the entire tube, and even the first and second antennal segments. In *magnafemoralis* there is much less red pigment in the head, little in the legs and that mostly in the coxae, and the last abdominal segment is free of red pigment; the second abdominal segment is lighter in color, often distinctly yellow, and forms a conspicuous band. In this species the anterior angles of the head are produced over and between the bases of the antennae and the eyes into striking horns which considerably exceed the first antennal segment. These horns are curved and incompletely divided by a constriction near the middle. From the apex of the basal section arises a large, colorless, blunt bristle which extends beyond the horn. This horn-like extension is absent from the larvae of *corticis*.

FOODPLANT OF LUPERINA PASSER GN. (LEPIDOPTERA).

BY GEORGE P. ENGELHARDT, Museum, Brooklyn, N. Y.

It appears that nothing has been published regarding the food-plant and habits of this rather common moth.

The larva is a borer in the roots of *Rumex verticillatus* and probably other species of this group of plants. It hibernates within its gallery, continues feeding for a short time in the spring and attains full growth (1½ inches) early in May. The head, neck- and anal-shields are chestnut brown; otherwise it is dull white. When ready to pupate, the larva leaves its burrow to construct a slight cocoon within the adjoining soil. The pupa is glossy, light brown. One imago, female, obtained out of three